Investigation of Fed Cattle Procurement in the Texas Panhandle

GIPSA BACKGROUNDER

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USDA is releasing the results of its investigation of fed cattle procurement in the Texas Panhandle, which was completed recently by the Grain Inspection, Packers and Stockyards Administration (GIPSA) as part of its ongoing commitment to enforce the Packers and Stockyards Act. The objectives of the investigation, the background data, and the key findings are reported here.

Objectives
The objectives for the investigation were to:

- Examine the procurement areas, procurement methods, and pricing methods in the Texas Panhandle region,
- Compare actual prices paid in the region to AMS reported prices,
- Learn from feedyard managers and feedyard owners in the Texas Panhandle about their use of procurement methods,
- Determine if packers use their inventories of purchased cattle to manipulate prices, and
- Examine the effects of marketing agreements, formula price arrangements, forward contracts, and packer feeding arrangements on spot market prices. Such non-spot procurement methods are commonly referred to as captive supplies.

Timing and data summary
GIPSA initiated the investigation during the summer of 1996 to examine fed cattle procurement in the Texas Panhandle region. Data were collected from four steer and heifer slaughter plants operated by three of the largest packing firms in the United States:

- Excel Corp. in Friona, TX,
- Excel Corp. in Plainview, TX,
- IBP, Inc. in Amarillo, TX, and
- Monfort, Inc. in Dumas, TX.

In 1996, these four plants accounted for 90 percent of the federally inspected Texas steer and heifer slaughter and 17 percent of the U.S. steer and heifer slaughter. Data for the investigation were collected for 392 kill days for the period February 6, 1995, through May 18, 1996. These data cover over 37,000 purchase transactions and 6.2 million head

of cattle. The combined average daily slaughter of the four plants slaughtered was 15,730 head per day.

Steers accounted for 63 percent of the procured cattle lots, while 32 percent were heifers. The remaining five percent were mixed lots of steers and heifers or fed dairy cattle. Specifically looking at the fed steer lots and fed heifer lots, the average lot size was 168 head with a carcass yield of 63.9 percent. On average, each lot graded 51 percent prime or choice and 58.8 percent yield grade 1 or yield grade 2.

Descriptive Analysis

Although located in the Texas Panhandle region, the plants purchased fed cattle from several states in the Southwest. The majority of the fed cattle were from counties in or adjacent to the Texas Panhandle. Sixty-five percent of the cattle were purchased within a 75 mile radius of the plants.

For the investigation period, there were 216 sellers that marketed fewer than 10,000 head and 121 sellers that marketed more than 10,000 head. The weekly average prices paid to producers in these different size categories showed little difference when compared on a hot cost (carcass price) basis.

The three packers purchased over 70 percent of all their slaughter steers and heifers through the spot market. Twenty-one percent of the cattle were purchased through a marketing agreement, and 8.8 percent were either packer-fed or forward contracted.

Spot purchases occurring on Tuesday, Wednesday, and Thursday accounted for the majority of all transactions. There were only 3 weekdays out of 335 weekdays without spot purchases. On a weekly basis, the total number of non-spot purchases (purchases through marketing agreements, formula price arrangements, forward contracts, and packer feeding arrangements) ranged from less than 20,000 head to more than 40,000 head. Total procurement (spot and non-spot purchases) also varied over the period of investigation.

Sixty-seven percent of all spot cattle were slaughtered within 7 days of purchase. Thirty-two percent were slaughtered between 8 and 14 days after purchase. Approximately one percent of spot cattle was slaughtered more than 14 days after purchase.

Other areas of interest were the packers' live-cattle inventory and average daily inventory. Live-cattle inventory is the number of fed cattle that have been purchased but not yet slaughtered. Average daily inventory is live cattle inventory divided by the average daily kill of the plant. Packers' average daily inventory was 6.1 days worth of kill, of which the non-spot cattle inventory accounted for less than 2 days.

The investigation compared feedlot prices collected for the investigation with Agricultural Marketing Service (AMS) *Market News* daily reported prices of live cattle for slaughter for the Texas/Oklahoma region. Average feedlot spot prices from the

investigation data showed little difference from the *Market News* reported daily average 35 to 65 percent select or choice (SE/CH 35/65%) steer price. In terms of the range of prices, the investigation data showed that prices below the *Market News* daily reported low price occurred more frequently than prices above the daily reported high price. For example, there were 91 days with at least one transaction where the feedyard price was above the *Market News* reported high price, and 219 days with at least one transaction below the reported low price.

GIPSA personnel interviewed feedyard managers and feedyard owners about the various aspects of fed cattle markets including the terms of their marketing agreements with packers.

The feedyard owner or feedyard manager generally determines the number of cattle to be delivered to a plant under a given marketing agreement within a given week. That determination is usually made two weeks in advance of delivery. Once the volume of marketing agreement deliveries for a given week is set, the packer decides the specific day or days of the week when delivery will be made. Under forward contracts, the feedyard owner or feedyard manager chooses the day on which price will be established, but the packer decides the day of delivery within the nominated month. In practice, the packer will consult with the feedyard owner or feedyard manager to ensure the cattle are marketed at their optimal weights and conditions.

Econometric Analysis

GIPSA entered into a cooperative agreement with Dr. Schroeter from Iowa State University and Dr. Azzam from the University of Nebraska to conduct an econometric analysis of fed cattle procurement in the Texas Panhandle. The objective of the project was to measure the use of non-spot purchases and the effects of non-spot purchases on prices paid for fed cattle during the period of the investigation.

Drs. Schroeter and Azzam focused on the short-run (week-to-week) relationship between the delivery volumes of cattle procured by non-spot methods and spot market prices for fed cattle. Their research extended previous studies in three important ways. First, information obtained through GIPSA's investigation was used to develop a better understanding of who controls delivery decisions for cattle procured by non-spot methods. Second, information from the investigation was drawn on to understand pricing mechanisms used in non-spot procurement methods, with particular emphasis on timing of the transaction. For example, who sets the day and week of delivery? When are the day and week of delivery and the transaction price determined? Third, the improved understanding of decision making and timing issues was used to develop better empirical models of the effects of non-spot procurement on spot market prices and to provide better interpretations of empirical research results.

In terms of the potential effects of non-spot purchases on spot prices, the econometric analysis provided two main findings:

- Packers with greater than average shares of non-spot purchases in their total purchases during a given week tended to pay lower than average prices for their spot market cattle. For example, a packer whose share of non-spot supplies in total supplies was 10 percentage points greater than the average share for the group was associated with a price for spot market cattle that was approximately $0.02 per cwt. less than the group average for spot market cattle.

- Econometric results were consistent with prior studies and showed that higher volumes of non-spot purchases were associated with lower prices in the spot market. Suppose for example, that the weekly volume of non-spot cattle deliveries increased from its average level of 26,400 head by 7,730 head (statistically, one sample standard deviation). The statistical results for one model would estimate that this change would be associated with a $0.69 per cwt. decrease in the live-weight spot price of steers, holding other factors constant. (The results for the same model would estimate that a similar 7,730 head increase in spot purchases would be associated with a $0.12 per cwt. increase in the live-weight spot price of steers, holding other factors constant.)

The estimated statistical relationships appear to suggest that reducing non-spot purchases or increasing spot purchases could have a positive effect on spot price. However, the researchers note with regard to this suggestion that a statistical association does not prove causation. In addition, they caution that the policy relevance of this empirical regularity depends on the nature of the economic mechanism responsible for generating it. To illustrate their point, they suggest that the actions of feedyard managers who sell cattle through non-spot arrangements could contribute to the finding that a greater volume of non-spot purchases was associated with lower prices. This is because feedyard managers generally control when cattle are delivered under marketing agreements and because non-spot cattle are priced the week before delivery.

The researchers assume that if feedyard managers expect a price reduction from one week to the next they may deliver more non-spot cattle to be priced before the price reduction. Therefore, because non-spot cattle are delivered the week after they are priced, there will be a negative correlation between expected price reductions and changes in the delivery numbers of non-spot cattle. Then, because feedyard managers' expectations of future spot prices are likely to be close to actual prices, there is also likely to be a negative association between an increase in cattle from non-spot purchases and a reduction in the spot price of cattle. The researchers' econometric evidence was consistent with the behavior expected of market participants who make delivery decisions based on forecasts of price over short horizons.

The researchers also looked at other relationships between non-spot purchases and spot market prices. In particular, they considered: (1) Did cattle sold on the spot market receive different prices than those sold through non-spot methods? (2) Did packers tend to pay lower spot prices when they paid for non-spot cattle according to the plant average cost of spot cattle purchases rather than a publicly reported average price? They concluded the following:

- Cattle sold through non-spot methods tended to receive a higher price than cattle sold on the spot market even after accounting for differences in cattle quality. The range of premiums for marketing agreement cattle over spot market cattle in prices paid ranged from $0.52 per cwt. to $2.20 per cwt..

- There was no statistically significant relationship between the spot-market prices paid by a packer and quantity of non-spot cattle paid according to the packer's use of plant average hot cost or a publicly reported average price.

CONCLUSIONS

GIPSA's investigation into the procurement of cattle in the Texas Panhandle region found substantial variation in the use of methods of cattle procurement. It found in the econometric analysis performed under cooperative agreement with university researchers that the statistical association found in other studies – an increase in non-spot purchases was associated with lower spot prices – was found in the Texas Panhandle data as well. Although the econometric analysis did not test for a causal relationship between the two, it did test and find limited support for the statistical association being, at least in part, a consequence of feeders' marketing choices. Nevertheless, the analysis did find that cattle sold under non-spot methods tended to receive higher prices than spot cattle sold in the spot market. GIPSA will continue to pursue these issues through its own investigations and by supporting research under cooperative agreements with outside researchers.

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